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SUBJECT: ARGENTINA'S CONSIDERABLE RENEWABLE ENERGY POTENTIAL

REF: A) BUENOS AIRES 275; B) 2008 BUENOS AIRES 1745

¶1. Summary: Argentina is a potential world leader in renewable energy. Already a leading producer and exporter of biodiesel, Argentina's extensive forestry resources could provide ample biomass for second-generation biofuels (ref A). The country's southern Patagonia region enjoys some of the most sustained and strongest winds found anywhere. Wind power probably offers the best potential for renewable energy generation, and incipient development of wind farms is taking place as a result. The sunny climate of the west and northwest of the country offers good conditions for solar power. Hydroelectric power already provides over 40% of electricity consumed in Argentina. The country also has a long history of nuclear power use, with long-term plans calling for a new plant to come on-line every five years (ref B).

¶2. While biodiesel production and exports have seen a dramatic rise over the past three years, structural problems have hampered the full development of other sources of alternative energy. Residential and business electricity tariffs that, despite some recent increases, have been held at levels substantially below world market norms have discouraged private investment in new capital-intensive energy projects, in particular wind farms and hydroelectric plants.
Still, recent public-private partnerships between individual provinces and private companies in wind power development appear to point to a workable model. This cable looks at the state of renewable energy in Argentina, with the exception of biofuels which was covered in a separate report (ref A). End Summary.

Electricity Production

¶3. Argentina's installed nominal electricity generation capacity is 24,000 MW. The overwhelming majority of electricity is generated through hydroelectric (40%) and thermal power generation (52%), the latter mostly from natural gas. Argentina still has a large untapped potential for hydroelectric power. Nuclear power provides about eight percent of the country's energy needs. Despite a recent leveling in electricity demand due to the global economic slowdown and some increases in domestic wholesale and retail electricity tariffs, it is estimated that the country will need to add approximately 1,000 MW of new generation capacity annually in the medium term.

¶4. As a result of the liberalization of the power generation market in the 1990s, over three-quarters of power generation capacity is currently controlled by private interests. Transmission and distribution, however, are much less competitive and are still highly regulated and controlled by the GOA. No new large privately-funded greenfield power generation project has been undertaken over the past eight years, in large part because wholesale electricity tariffs paid to generators have been held well below international market levels since the aftermath of the 2002 economic crisis. The GoA's 2007 "Energy Plus" initiative, which allows generators to charge higher wholesale tariffs for new cost-effective capacity, has encouraged some incremental investment.

Renewable Energy Legislation

¶5. The most important legislation promoting renewable energy is Law

25,019 from 1998 and Law 26,190 from 2007. The 1998 law, known as the "National Wind and Solar Energy Rules", declared wind and solar power generation of national interest, provided an additional payment per MW/h produced and granted tax exemptions for 15 years from the law's promulgation. Law 26,190 of 2007 broadened the 1998 law by declaring of national interest the generation of electricity from any renewable source intended to deliver a public service. It outlined which sources of renewable energy qualify for state support, provided tax breaks for renewable energy equipment and offered tariffs for certain renewable resources. It included promotion of wind, solar, and small hydro power, a fuel cell project, and rural electrification.

¶6. The 2007 law also established a target of 8% for renewable energy consumption by 2017 and mandated the creation of a trust fund, the Renewable Energy and Energy Efficiency Partnership (REEEP), whose resources would be allocated to pay a premium for electricity produced from renewable sources. The Planning Ministry's Energy Secretariat is responsible for the development of renewable energy strategies and encouraging energy efficiency. The Secretariat of the Environment is responsible for environmental policies conducive to the preservation of renewable and non-renewable resources.

Hydroelectric and Nuclear Power

¶7. Argentina's hydroelectric production amounts to about 42,000 MW, while its estimated potential exceeds 170,000 MW. There have been no new major private investments in hydroelectric plants since the 1990s, however. At issue again is the current policy that sets electricity tariffs below international market levels, which has discouraged large-scale private investment. On the public side, however, works are in progress to raise the height of the Yacyreta dam, shared by Argentina and Paraguay, to a height of 83 m, thus increasing its output from 1,700 MW to 3,100 MW.

¶8. Argentina has been a player in the nuclear field since the early 1950s. In 2006, the GOA launched a plan to boost nuclear power generation. As a result, construction work on the Atucha II nuclear power plant, initiated in 1981, was reinvigorated, with completion expected for 2010. Atucha II will add 750 MW of generation capacity. In addition, the Embalse nuclear power plant, with 648 MW of generation capacity, will be refurbished to extend its operational life beyond 2011. The GOA's plans call for a new nuclear plant to come on line every five years until 2020. In a conversation with the Ambassador, the Canadian Ambassador mentioned a possible agreement with Canada to build the next nuclear power plant, following the completion of Atucha II. Argentina has its own heavy water production facility to supply these plants. An extensive overview of the country's civil nuclear industry was covered in ref B.

Wind Power

¶9. The Patagonia region of Argentina has some of the most sustained and strongest winds found anywhere, and some development of wind farms has taken place as a result. The rolling hills of the Province of Buenos Aires also offer excellent wind conditions. While the theoretical wind power potential for Argentina has been estimated at 500,000 MW of electricity generation, this huge potential is still largely unexploited. Official reports estimate that 1,000-2,000 MW could come from wind power generation by 2015, compared with the current 27 MW (2008).

¶10. One of the reasons for the underdevelopment of wind power in Argentina is that electricity tariffs and current developmental incentives do not yet make wind farms attractive enough. Another deterrent to wind power development is the lack of transmission lines to connect Patagonia with the national grid, though some work has taken place over the past couple of years, in particular with the coming on-line of the first section of the Linea Patagonia.

¶11. While wind power generation increased in Argentina over the last decade, it still represents an infinitesimal part of the

country's potential. Total operating wind power capacity in 2008 was 27 MW, distributed among 13 operating wind farms (10 of them built in the 1990s). This represented less than 0.05% of the theoretical potential of wind energy in Argentina. Wind farms and their total capacity were distributed as follows, by province: Chubut (4 farms - 17,460 kW), Buenos Aires (6 farms - 6,100 kW), Santa Cruz (1 farm - 2,400 kW), La Pampa (1 farm - 1,800 kW), Neuquen (1 farm - 400 kW).

¶12. Other projects are being considered. The Province of Chubut obtained a World Bank credit of $7 million for the provision, installation, set up and maintenance of 1,500 small turbines of 500 ¶W. One of the main wind power projects in Argentina is "Ingentis", a wind park of 100 MW in Chubut, composed on 50 turbines of 2 MW each, for an estimated investment of $150 million. The shareholders in the project are the Province of Chubut with 39%, and two private Argentine companies, Emgasud and Pampa Holdings, with 30.5% each.

¶13. PEPSA, a local concern allied with ABO-Wind of Germany, recently received the authorization from the Secretariat of Energy to be a new agent in the wholesale energy market for the 50 MW wind farm it is installing in the Province of Buenos Aires. German firm Sowitec has announced that it is considering an investment of $100 million in the Province of Buenos Aires. General Electric has partnered with Argentine company Emgasud on a $450 million wind farm project that would generate 300 MW in Rivadavia (Chubut Province). GE is confident that new regulations and incentives may soon be enacted to make investments in wind power more attractive to private investors.

¶14. The most prominent private Argentine company involved in wind power is IMPSA, flagship of the Pescarmona Group, which manufactures 1.5 MW turbines in Mendoza, and opened a plant in Brazil in 2008. IMPSA is said to have plans to install 3,000 MW of new capacity in Patagonia over the next three years. Another high-tech local company, INVAP, is currently involved in the development of a 1.5 MW wind turbine. INVAP is a versatile corporation, half-privately owned and half-owned by the Province of Rio Negro. It is well-known for its engineering capabilities and development of nuclear and space projects.

Solar Power

¶15. Solar power is only present in remote areas and is used mostly for housing and small factories. A $50 million World Bank loan approved in November 2008 will provide reliable electricity to rural communities with renewable energy, through the Renewable Energy in the Rural Market Project (PERMER). The major focus of this initiative is the installation of 15,500 new solar home systems and 630 solar PV systems for rural schools.

¶16. All of the solar power produced so far in Argentina is for local use and none is connected to the grid. The Province of San Juan, however, plans to launch a tender for a solar power farm of 5 MW that would eventually be connected to the national grid. The price at which the resulting energy will be negotiated will create a precedent for future solar power developments. Four companies have already expressed interest in bidding for this call in San Juan: IMPSA (Argentina), Abengoa (Spain), Giacomini (Italy) and Q-Cells (Germany). An interesting element in this project is that San Juan Province is a major producer of quartz, a key component for solar panels.

Hydrogen Fuel Cells

¶17. In 2006, the Argentine Congress approved Law 26,123 to promote hydrogen as a fuel. Under the law, the development of technology, production, use and applications of hydrogen as fuel were declared of general interest, and research and development of this field were to be fostered by the government. The law gives considerable tax benefits for 15 years to promote the production, use and applications of hydrogen, such as early refund of value-added tax when buying, manufacturing, or importing capital goods; accelerated amortization for income tax purposes; exemption from minimum

presumptive income tax; and exemption from liquid and natural gas special tax. While there is continuing interest and a significant body of research is being conducted in Argentina by several institutes and universities, there have not been any practical applications as of yet.

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Comment: A Willing Partner in Renewable Energy
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¶18. Argentina is a potential world leader in alternative and renewable energy. With the right conditions and incentives, including further steps by the GoA to rationalize domestic wholesale and retail electricity pricing and so make alternative energies technologies more economically viable, Argentina could become the next large country to develop significant wind power generation. Local and foreign companies are partnering with provincial governments to take advantage of this potential or are positioning themselves for the new regulations and incentives that they believe will soon boost the sector. The Argentines are also seeking partners for hydrogen fuel cell research and solar power development. With Argentina looking to the USG and the EU for technology transfers and investments in alternative power generation, the opportunity is there for productive cooperation on renewable energy. End Comment.

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